

Concepts such as “raising the bar,” “raising expectations,” and “getting students outside their comfort zone” are all part of the research behind the Accelerator Model; also included are the importance of taking risks and accepting failure as a frequent and productive means to growth and success.

As part of Pacific Crest’s PC:SOLVE demonstrations, we designed a script of activities for students in order to show faculty how well students could perform. These activities intentionally created a dynamic and energetic environment in which teams were challenged to compete at solving problems. In such an environment, students took risks, were aggressive in experimenting, learned from failure by figuring things out, and showed all the signs of thinking critically and reflecting on their performance. We discovered that the harder we pushed these students, the more impressive their responses and the more confidence they developed. (Dan Apple, personal recollection)

The model of this environment—especially with its elements of strategic risk-taking, a culture of “try it,” and accepting failure as frequent and productive means to success—was developed in *Learning Through Problem Solving* (Apple, Beyerlein & Schlesinger, 1992). *Teach for Learning — A Handbook for Process Education* (Apple, 1993) described discovery learning as a stimulus for prompting students to not just passively take in information, but to actively engage by asking “Why?” when presented with information. This same handbook also helped instructors learn to model the behaviors sought from students, so that students would learn to experience the process of learning for themselves rather than “being taught.” Instructors were advised to respond to student questions with insightful questions, modeling what students could ask themselves. In modeling such questions, instructors caused a productive kind of frustration, as most students initially prefer simply being given an answer instead of having to assume the mantle of questioner, discoverer, and researcher themselves. *Teach for Learning* also recommended that, as with the PC:SOLVE demonstrations, instructors should constantly increase the challenge as students succeed with current challenges, a strategy that increases student confidence and engagement.

The concept of *time pressured learning* was introduced in the *Teaching Institute Handbook* (Apple, 1995), noting that instructors can achieve the desired amount of pressure by raising expectations or limiting the time available for completing activities. A Teaching Institute activity, “Frustration,” gave faculty the opportunity to discover that

not meeting performance criteria (failing, to at least some degree) can provide:

1. An opportunity for future motivation
2. The impetus for students to improve their learning performance by improving their learning skills
3. An insight into the value of reflection time in helping students learn more about learning

The 1998 *Teaching Institute Handbook* (Apple & Krum-sieg) saw the first publication of the Accelerator Model (so named because varying the level of challenge is analogous to varying the pressure on an accelerator) as a way to help faculty appreciate how raising the level of challenge (pushing down on the accelerator) can lead to greater student learning and growth. The *Faculty Guidebook* module *The Accelerator Model* (Morgan & Apple 2007) effectively links the model to scholarship concerned with learning, degree of challenge, emotional skills, engagement, and motivation (see especially Bandura 1997, Bransford, Brown, & Cocking 2000, Damasio 2005, Gist, Schwoerer & Rosen 1989, Goleman 1997, Mikulincer 1998, and Picard 1997), even as it demonstrates the relationships among the pieces previously laid out: challenge, raised expectations, risk-taking, productive frustration, failure as a motivator, and time-pressured learning.

According to the Accelerator Model, there are three variables that regulate the growth and development of students’ cognitive and affective learning skills: the cognitive skill set of students, the affective skill set possessed by students, and the degree of challenge initiated by the instructor (Figure 1 shows these variables set as axes in the model).

The z-axis, “Affective Skill Set” is of particular note, as it includes affective skills such as risk-taking, persisting, managing frustration, and handling failure, all skills that are critical if learners are to be actively engaged and high performing. As Figure 2 makes clear, the stronger a learner’s affective skill set, the more effectively he or she will be able to meet learning challenges without significant anxiety, anger, frustration, or disengagement. Conversely, personal growth in affective skills can only occur when a learner is below his or her “happy zone.” This means that we build affective skills by increasing challenge (depressing the accelerator) either by increasing complexity or restricting time available to the point that learners are outside of their

Figure 1 The Accelerator Model

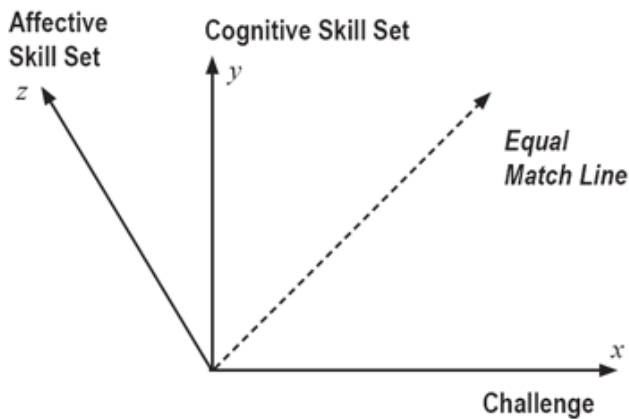
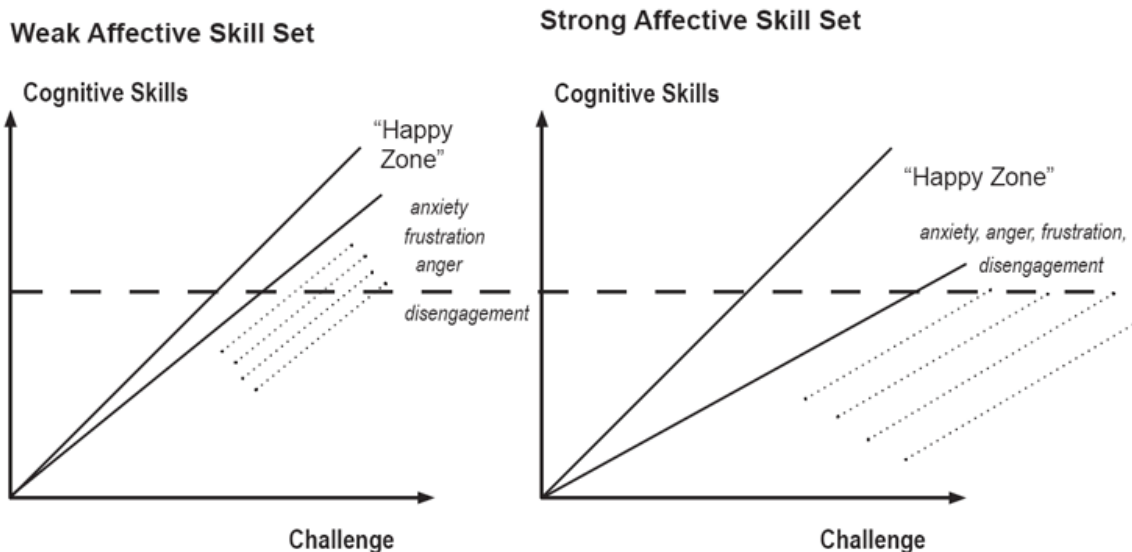


Figure 3

1. Establish initial respect.
2. Start with no prejudging.
3. Obtain shared commitment.
4. Foster and support risk-taking.
5. Permit the learner to fail.
6. Set high expectations.
7. Establish clear performance criteria.
8. Implement a quality assessment system.
9. Document performance.
10. Continuously challenge performance.

Figure 2 Consequences of Weak Versus Strong Affective Skill Sets



happy or comfort zone. As their affective skills grow, they are better able to increasingly meet more difficult learning challenges that build their cognitive skills.

A learning environment in which the Accelerator Model works and in which students evince a willingness to take risks and embrace a “try it” attitude must be conscientiously and deliberately created. The *Methodology for Creating a Quality Learning Environment* (Smith & Apple, 2007) from the *Faculty Guidebook*, includes the 10 steps available in Figure 3, as the process for creating just such an environment, with Steps 4, 5, 6, and 10 speaking directly to the importance of learners having the opportunity to build strong affective skills (see also *Setting High Expectations* by Smith, 2007).

While many learning activities available to students may target affective skills and raise the level of challenge over the course of the activity, the bulk of discussion available

about the Accelerator Model and what comprises a quality learning environment is written for educators rather than students. In *Learning to Learn: Becoming a Self-Grower* (Apple, Morgan & Hintze 2013), we tip our hand in Experience 12: Using Failure as a Stepping Stone to Success, actively challenging students to step outside their comfort zone. While the Accelerator Model itself is absent, students are given appropriate context and information about the affective skills discussed previously, in the context of personal development. The learning objectives for this experience are to help students learn the value of failure as a frequent and productive means for achieving success, increase their willingness to take on greater risks so that new opportunities become available to them, and assess failures so that they can turn them into successes—all skills evident in engaged, confident, and successful learners.

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